Cortical Visual Impairment (CVI)

What to know and how to support children with this brain-based visual impairment.

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What is Cortical Visual Impairment?

Cortical Visual Impairment (CVI) is a brain-based visual impairment. The eyes can see, but the brain has difficulty interpreting the visual world.

A Child Has CVI When

- An eye exam cannot fully explain their vision loss.
- They have a history of a neurological condition or brain injury, even if brain scans appear normal.
- They show specific visual and behavioral patterns identified in medical and educational research.[1,2]

Individuals with CVI report that their vision can feel unreliable, like a kaleidoscope of shifting color and pattern.

The Brain, Not the Eyes

Ocular (eye-based) vision loss refers to how the eye works. CVI is about how the brain understands what the eye sees.

Routine vision exams may not find CVI, and many children with CVI have complex medical conditions that make it even harder to diagnose.[3]

A child's "functional vision," or how they use their vision in daily life, must be measured with a CVI-specific tool such as the CVI Range©, as a basis for interventions and support.[2]

There Is Hope for Improvement

The brain can change and form new pathways through neuroplasticity—and with the right supports, a child's functional vision can improve, unlocking learning and social potential.[4,5]

Key Facts

CVI has become the leading cause of visual impairment in children in developed countries.

20–48%
of children with visual impairment in the U.S., U.K., and similar nations have CVI.[6-9]

UP TO 44%
of children in India with vision loss are affected by CVI.[10]

UP TO 70%
of children with cerebral palsy are estimated to have CVI.[11]

A Multidisciplinary Approach

Eye Health

Medical doctors—usually an ophthalmologist, neuro-ophthalmologist, or optometrist—can diagnose CVI after a complete eye exam. Children with CVI may also have coexisting ocular conditions, but they will not fully explain their functional visual difficulties.

Medical History

Children with CVI often have a neurological event or condition affecting the visual pathways of the developing brain, including lack of oxygen or blood flow to the brain, prematurity with periventricular leukomalacia, trauma, hydrocephalus, seizures, and genetic or metabolic conditions.[1]

Behavioral Characteristics

Diagnosis also relies on unique behavioral and visual characteristics described in the CVI Range©.

Brain Imaging

While scans can support the diagnosis, some children will not have a visible neurological issue.[12]

Ongoing Follow-Up

Repeated evaluations can rule out other causes of vision loss, such as inherited disorders or delayed visual maturation.[13] There are no direct medical treatments for CVI, but coexisting eye conditions should still receive care.[14]

Team Support

Doctors should understand CVI risk factors to enable early identification and referral. Teachers of Students with Visual Impairments (TVIs), Occupational Therapists (OTs), and orientation and mobility specialists (O&Ms) can collaborate to improve functional vision.

CVI Range© Assessment[2]

This is a valid and reliable educational assessment tool for youth with CVI that:

- Measures the impact of a child's brain-based visual impairment on everyday life.
- Provides a quantitative value, which offers the team a baseline so progress can be monitored and interventions designed accordingly.

Why CVI-Specific?

- Standard functional vision assessments measure impact and design interventions for individuals with ocular visual impairments.
- There are currently no standardized academic, neuropsychological, or developmental assessments for individuals with CVI.
- Guided by the child's CVI Range© score, teachers and therapists support learning, connection, and life skills—whatever the starting point.

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PCVIS is a 501(c)(3) nonprofit organization transforming outcomes for children with CVI by advocating for research, policy, education, practice, heightened awareness, and understanding of this brain-based visual impairment.

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